On the Shift to Medical SI Units

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The full shift to the metric system in the US medical literature has begun, signaled by the transition by many American medical journals during 1987 and 1988 to SI units. This is the abbreviation for *le Système international d' Unités,* a widely accepted international system of measurement units that has grown out of the metric system as the result of over 100 years of international cooperation.

The US scientific community has been slow to adopt this system. More than 98 percent of the world's population live in countries that have already adopted SI units.[1] In 1975 the US Congress passed the Metric Conversion Act. It has been largely through the efforts of the American National Metric Council (ANMC), however, that the shift to SI units has been effectively promoted. In December 1984, the House of Delegates of the American Medical Association called for conversion to SI units.[2] Recently 13 major US medical journals in many clinical disciplines have announced their intention to shift to SI units starting this year.[3]

Among the many compelling reasons to shift to SI units, two stand out: (1) to satisfy the need for effective communication of scientific information between nations and among disciplines, and (2) to provide a uniform system of measurement consistent with the ways in which biological components behave in vivo. The major impact of the shift to SI units will take place in the reporting of hematology and clinical laboratory values. In hematology, the liter becomes the reference volume. Cell count values increase by 10^6 from those based on traditional microliter or cubic millimeter reference volumes, whereas hemoglobin values increase by a factor of 10 (eg, hemoglobin 15 g/dL is equivalent to 150 g/L). In clinical chemistry the basic change involves a shift from mass units to molar units (eg, serum glucose 110 mg/dL equals 6.1 mmol/L).

Over the next several years, American readers of the medical literature will be faced with the need to become familiar with SI units and with new ranges of normal and abnormal values. This problem will undoubtedly create confusion for us all, but the required educational process will be assisted in several ways. During a transition period of two or more years, most journals will simultaneously publish traditional and SI unit ranges. In addition, two excellent references are available to assist readers to understand the new SI units:

1. An excellent article, including conversion tables, by Dr. Donald Young[4] (single reprints available upon request without charge from the Annals Business Department, 4200 Pine Street, Philadelphia, PA 19104; telephone 800-523-1546).

2. A useful monograph published in 1982 by Dr. M. J. McQueen,[1] (available from Simole Consultants Ltd, Burlington, Ontario L7P 3N3, for $8 US plus $1 US for handling; telephone 416-335-3236).

This journal will publish, for at least the next four years, SI values immediately followed by traditional values for comparison. For readers of this journal, the impact of this change will be gradual. In this issue, for example, only two articles require the use of SI units.[5,6] However, the shift to SI units is here, and we can expect to see SI units become the common language in the medical literature, in clinical laboratory reports and in quality assurance standards. This journal is pleased to join with other US journals in welcoming a more effective international system of communication of medical information.

References

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